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said first and second active regions each having a portion having a width substantially the same as a width of said third active region.

REMARKS

Favorable reconsideration of this application is respectfully requested.

Claims 40-47, 49, 50 and 52-78 are present in this application, claims 48 and 51 being canceled and claims 77-78 being added by way of the present amendment. Claims 40-47 and 49-76 stand rejected under 35 U.S.C. §102(b) or, in the alternative, under 35 U.S.C. §103(a) over U.S. 5,318,916 (Enquist et al.), and under 35 U.S.C. 103(a) over U.S. 5,247,192 (Nii). Claim 48 has been withdrawn from consideration.

Claim 51 was rejected under 35 U.S.C. 112, second paragraph, since it was found not to read on the elected species. The Applicant agrees that claim 51 does not read on the elected species and thus withdrawal of this claim from consideration is appropriate, as stated in the previous response. Claim 51 has been canceled. Withdrawal of the §112 rejection of claim 51 is respectfully requested.

As discussed in the last response, the present invention is directed to a semiconductor device having active regions which are symmetrically self-aligned. The terms "symmetric" and "self-aligned" are attributes of the structure, and are not "process limitations." Self-alignment is the characteristic where a position of one element of the device is aligned to another element of the device without any misalignment due to photolithographic tolerances. A symmetrically self-aligned structure is different than a non-self-aligned structure, and the difference is not something that can be discarded by calling it a "process" element but the difference is manifested in the resulting structure. In the non-self-aligned device, the

resulting structure elements are not similarly aligned and the optimum device characteristics may not be obtained.

Turning to the rejection over Enquist et al., the Office Action refers to Fig. 11, and finds region 70 to correspond to the first active region, region 101 to correspond to the second active region and region 12 to correspond to the third active region recited in claim 40. The Office Action states that Enquist et al. teaches that the first and second active regions (70 and 101) are “symmetrically self-aligned.” However, Enquist et al. only teaches that elements 70 and 101 are “symmetrically aligned.” There is never any assertion or any suggestion in Enquist et al. of a symmetrically self-aligned structure, in particular any self-alignment between elements 70 and 101.

Referring to column 8, beginning at line 37, a collector contact 60 is deposited on collector layer 11 symmetrically aligned with the emitter contact 31. This alignment is made photolithographically, and there is clearly no suggestion of the collector metal 60 being self-aligned to any structure in the device. The alignment of region 70 is determined relative to contact 60, as shown in Fig. 7. As element 70 is aligned relative to collector contact 60, there is no self-alignment between element 70 and the underlying collector 20, or 101.

In Enquist et al. there is a distinction made between what is self-aligned and what is not self-aligned. The base contacts 80 are described as self-aligned to the collector mesa 70 using collector metal contact 60 as a mask (see column 9, beginning at line 18). In this case the interior edges of the contact 80 are determined by contact 60, and the formation of collector mesa 70 is also determined by the contact 60. Mesa 70 and the interior edges of contacts 80 are self-aligned with respect to each other. Enquist et al. uses “self-aligned” in describing this relationship. When describing the relationship between elements 70 and 101, Enquist et al. clearly describes this relationship as “symmetrically aligned.” There is no

suggestion that these two elements are self-aligned. To the contrary, these elements are clearly not self-aligned since the position of element 70 is determined photolithographically and not self-aligned with another structure in the device, particularly element 101 or 20.

As Enquist et al. clearly does not disclose or suggest first and second active regions being symmetrically self-aligned as asserted in the Office Action, withdrawal of the rejection of claim 40 over Enquist et al. is respectfully requested.

The same situation exists with the rejection over Nii. In this reference, a mask is used to form opening 12 in which layer 2 is epitaxially grown. Subsequently, using the same mask, but in separate alignment and etching steps, opening 14 is formed by etching film 6 and 7. In other words, the alignment of opening 14 is determined by the second photolithographic and etching steps, and is not self-aligned to any structure in the device. The subsequently formed layers 3 and 4 thus have a position in the device determined by the second alignment and etching steps used to form opening 14. The alignment of layers 2 and 4 are thus not self-aligned, but are subject to misalignment and offset due to use of different photolithographic and etching steps to respectively form regions 2 and 4. There is further no assertion in Nii of self-alignment between regions 2 and 4. The Nii device structure suffers from the degradation of device characteristics and other limitations due to misalignments or offsets from using two different photolithographic and etching steps to determine the position of the elements of the device. As Nii does not disclose or suggest a self-aligned symmetric device, the withdrawal of the rejection of claim 40 over Nii must be withdrawn.

In the last response claims 44, 45, 52, 54, 56, 65, 66 and 73-75 it was explained how each claim was clearly not suggested by Nii. No response to these explanations is found in the Office Action. These rejections cannot be maintained since there is no suggestion of these claims by Nii. Nothing in the record supports the rejection and thus the rejection must

be withdrawn. If the rejection is again maintained, a detailed discussion why these claims are rendered obvious by Nii is required.

It is respectfully submitted that the present application is in condition for allowance and a favorable decision to that effect is respectfully requested.

Respectfully submitted,

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